

## TAG QUARTERLY PROGRESS REPORT

Date: November 15, 2004  
Report Number: 6  
Report Period: July 1, 2004 to September 30, 2004  
Site: Pantex Superfund Site  
Grant Recipient: STAND, Inc.  
Recipient Group Rep: Pam Allison, Project Manager  
Technical Advisor: The Cadmus Group; IEER; George Rice

### PROGRESS ACHIEVED:

- The Cadmus Group - Provided final draft of *Citizens' Guide to the RFIRs* for STAND to review.
- IEER - Submitted report on additional comments regarding the Pantex Radionuclides Document Appendix D.
- George Rice - Finalized comments on the *Final RCRA Facility Investigation Report: Groundwater, US Department of Energy Pantex Plant, Amarillo, Texas*.
- George Rice - Reviewed the Department of Energy's *Final Pantex Plant Radiological Investigation Report* (January 2004).
- George Rice - Provided written comments based on the review of the Department of Energy's *Final Pantex Plant Radiological Investigation Report* (January 2004) for submittal to the EPA and TCEQ.
- George Rice - Reviewed/compared versions of the Pantex Risk Reduction Rule Guidance document (previously submitted vs recent submittal to EPA and TCEQ).
- Mavis Belisle - Identified SWMUs and/or AOCs for which it was not clear had been carried forward through the RCRA process, or may have been overlooked.
- Pam Allison - Reviewed IEER's comments resulting from review of the Pantex Radionuclides Document Appendix D.



- Attended the quarterly Pantex Groundwater meeting at Panhandle, Texas, for Pantex' updates on the progress of environmental cleanup at Pantex.

**DIFFICULTIES ENCOUNTERED:**

- Difficulty in determining whether or not Pantex had submitted incorrectly the same copy of its Risk Reduction Rule Guidance document to the EPA and the TCEQ, as having addressed the written concerns of the regulators.

**PERCENT OF PROJECT COMPLETED TO DATE:**

- 98 Percent

**DELIVERABLES PRODUCED THIS QUARTER:**

- IEER - Submitted additional comments (September 20, 2004) based on its review of Appendix D of the Pantex Radionuclides Information Report
- George Rice - Submitted written review of the Pantex Plant Radiological Investigation Report, for submission to the EPA and TCEQ.
- Held one public meeting to provide the current status of Pantex' environmental cleanup as a part of the discussion.
- Printed and distributed a newsletter with updates about the Pantex' environmental cleanup.

**ACTIVITY ANTICIPATED IN NEXT QUARTER:**

- Follow-up to determine whether or not some of the SWMUs and/or AOCs are indeed unaccounted for in the Final RFIRs.
- Edit, publish, and distribute the Citizens' Guide to the RFIRs, submitted to STAND by the Cadmus Group.
- Receive comments from George Rice regarding the resubmission of the Pantex Risk Reduction Rule Guidance document as compared to the action items identified in the conditional approval letter from TCEQ.
- Attend the Pantex Quarterly Groundwater Meeting, scheduled for December 6, 2004, to gain an update as to cleanup of the regional groundwater.

## TECHNICAL PROGRESS REPORT

Cadmus / STAND Contract No. 1

Technical Advisory Services for Serious Texans Against Nuclear Dumping

June 27, 2004 – July 31, 2004

<b>STAND TAG Project Director:</b>	Pamela S. Allison
<b>Effective Date:</b>	November 3, 2003
<b>Completion Date:</b>	November 2, 2004

### Summary of Activities for the Current Month

- Performed routine work assignment management activities, including writing and submitting progress report.
- Completed draft Citizens' Guide.

### Problems Encountered and Remedial Actions Taken

- None.

### Anticipated Activities for Next Reporting Period

- None.

### Project Milestones

Task	Completion Date
Review Zone 12 RFIR	December 23, 2003
Submit comments on Zone 12 Report to TCEQ	December 23, 2003
Submit Letter of Prelim. Findings on D & P RFIR	February 10, 2004
Submit Letter of Preliminary Findings on Baseline Risk Assessment Work Plan	February 10, 2004
Attend Public Meetings - March	March 1, 2004
Send D & P data analysis spreadsheet to STAND	April 4, 2004
Submit Citizens Guide to STAND	July 30, 2004

### **Changes in Assigned Personnel**

- None.

### **Estimates for Next Month**

**LOE hours:** 0

**Dollars:** 0

## TECHNICAL PROGRESS REPORT

IEER / Stand Contract No. 1

Technical Advisory Services for Serious Texans Against Nuclear Dumping

July 1 – July 31, 2004

**STAND TAG Project Director:**

Pamela S. Allison

**Effective Date:**

November 11, 2003

**Completion Date:**

November 10, 2004

### Summary of Activities for the Current Month

- Began preliminary review of the data contained in Appendix D to the Radiation Investigation Report which we did not have access to previously

### Problems Encountered and Remedial Actions Taken

- N/A

### Anticipated Activities for Next Reporting Period

- Conclude analysis of the radiological data sets

### Project Milestones

Task	Completion Date
Seek technical support by groundwater hydrologist George Rice, when helpful	(continues)
Review Ditches & Playas RFI	January 2004
Submit initial comments on Ditches & Playas RFI	January 2004
Submit report on comments regarding the Ditches & Playas RFI	June 7, 2004
Submit report on comments regarding the Pantex Radiation Document	June 7, 2004
Submit report on additional comments regarding the Pantex Radiation Document Appendix D	September 2004

**Estimates for Next Month**

**Hours:**

(b) (4)

**Dollars:**

[REDACTED]

# TECHNICAL PROGRESS REPORT

IEER / Stand Contract No. 1

Technical Advisory Services for Serious Texans Against Nuclear Dumping

August 1 – August 31, 2004

**STAND TAG Project Director:**

Pamela S. Allison

**Effective Date:**

November 11, 2003

**Completion Date:**

November 10, 2004

## Summary of Activities for the Current Month

- Began preparation of additional written comments for presentation to STAND, the EPA, and Pantex contractors regarding the data contained in Appendix D to the Radiation Investigation Report which we did not have access to previously

## Problems Encountered and Remedial Actions Taken

- N/A

## Anticipated Activities for Next Reporting Period

- Conclude analysis of the radiological data sets

## Project Milestones

Task	Completion Date
Seek technical support by groundwater hydrologist George Rice, when helpful	(continues)
Review Ditches & Playas RFI	January 2004
Submit initial comments on Ditches & Playas RFI	January 2004
Submit report on comments regarding the Ditches & Playas RFI	June 7, 2004
Submit report on comments regarding the Pantex Radiation Document	June 7, 2004
Submit report on additional comments regarding the Pantex Radiation Document Appendix D	September 2004

**Estimates for Next Month**

**Hours:**

(b) (4)

**Dollars:**

(b) (4)



# TECHNICAL PROGRESS REPORT

George Rice / Stand Contract No. 1

Technical Advisory Services for Serious Texans Against Nuclear Dumping

July 1 – July 31, 2004

STAND TAG Project Director:

Pamela S. Allison

Effective Date:

November 11, 2003

Completion Date:

November 10, 2004

## Summary of Activities for the Current Month

Gather information on contaminants detected in Independent Site wells. Provide reports on these wells.

<u>Date</u>	<u>Hours</u>
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7-4	(b) (4)
7-5	(b) (4)

Total Hours = (b) (4)

Fee = (b) (4)

## Problems Encountered and Remedial Actions Taken

- None.

## Anticipated Activities for Next Reporting Period

- none

## Project Milestones

Task	Completion Date
Provide technical support to CADMUS Group and IEER, as necessary	continues
Review _____	
Submit comments on _____ RFI	

Task	Completion Date

### Estimates for Next Month

**Hours:**            none

**Dollars:**        none

## TECHNICAL PROGRESS REPORT

George Rice / Stand Contract No. 1

Technical Advisory Services for Serious Texans Against Nuclear Dumping

August 1 – August 31, 2004

STAND TAG Project Director:

Pamela S. Allison

Effective Date:

November 11, 2003

Completion Date:

November 10, 2004

### Summary of Activities for the Current Month

Reviewed the Department of Energy's (DOE) *Final Pantex Plant Radiological Investigation Report*, January, 2004. Provided written comments based on this review.

Date   Hours

8-3.1 (b) (4)  
8-4  
8-5  
8-6  
8-12  
8-13  
8-15  
8-16  
8-17  
8-18  
8-19  
8-21  
8-22  
8-23  
8-24  
8-27

Total Hours = (b) (4)

Fee = (b) (4)

### Problems Encountered and Remedial Actions Taken

- None.

### Anticipated Activities for Next Reporting Period

- none

### Project Milestones

Task	Completion Date
Provide technical support to CADMUS Group and IEER, as necessary	continues
Review _____	
Submit comments on _____ RFI	

### Estimates for Next Month

**Hours:** none

**Dollars:** none

## TECHNICAL PROGRESS REPORT

George Rice / Stand Contract No. 1

Technical Advisory Services for Serious Texans Against Nuclear Dumping

September 1 – September 30, 2004

STAND TAG Project Director:

Pamela S. Allison

Effective Date:

November 11, 2003

Completion Date:

November 10, 2004

### Summary of Activities for the Current Month

- Reviewing/comparing versions of the Risk Reduction Rule Guidance documents for Pantex.

Date   Hours

9-2 (b) (4)  
9-3 [REDACTED]

Fee = (b) (4)

### Problems Encountered and Remedial Actions Taken

- None.

### Anticipated Activities for Next Reporting Period

- none

### Project Milestones

Task	Completion Date
Provide technical support to CADMUS Group and IEER, as necessary	continues
Review _____	
Submit comments on _____ RFI	
_____	

Task	Completion Date

**Estimates for Next Month**

**Hours:**           none

**Dollars:**         none

**Comments on:**  
***Final Pantex Plant Radiological Investigation Report, January, 2004***  
**George Rice**  
**August, 2004**

These comments are based on a review of the Department of Energy's (DOE) *Final Pantex Plant Radiological Investigation Report*, January, 2004. They were prepared for Serious Texans Against Nuclear Dumping (STAND).

### **Uranium Partition Coefficients<sup>1</sup>**

DOE's uranium (U) partition coefficients ( $K_d$ ) are higher than the values recommended by the Environmental Protection Agency (EPA). In the absence of site-specific  $K_d$  measurements, EPA recommends using values between 0.4 ml/g and 100 ml/g<sup>2</sup>. However, DOE used values of 35 ml/g and 450 ml/g<sup>3</sup>. No site-specific measurements of U  $K_d$ s have yet been performed at Pantex<sup>4</sup>.

DOE's  $K_d$  values were used in a transport model to estimate the time required for U to travel from contaminated soils to the underlying perched aquifer<sup>5</sup>. The high  $K_d$  values resulted in modeled transport times that may be too high<sup>6</sup>. This, in turn, resulted in the establishment of an impossibly high soil screening level (SSL) for U<sup>7</sup>. The practical effect of this is that DOE may be permitted to leave higher concentrations of U in soils than would be permitted if lower  $K_d$  values had been used in the transport model.

Recommendation: DOE should redo its estimates of U transport rates and SSLs using site-specific measurements of  $K_d$ s or the  $K_d$  values recommended by EPA.

### **Tritium**

DOE has not established a background value for tritium in either the perched aquifer or the Ogallala Aquifer. DOE states: "*Due to the lack of detectable levels of tritium at background sampling locations (Appendix C), a background UTL for tritium in groundwater at Pantex was not determined.*"<sup>8</sup>

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<sup>1</sup> Partition coefficients are parameters that control the mobility of contaminants. A contaminant with a low partition coefficient will travel at approximately the same speed as the water that is transporting it. Contaminants with high partition coefficients tend to become attached (sorbed) to subsurface solids. Thus, they travel more slowly than the water that transports them. Partition coefficients are also called 'distribution' coefficients.

<sup>2</sup> EPA, 2000, pages 5-4 and 5-6.

<sup>3</sup> DOE 2004, page E-22.

<sup>4</sup> DOE is in the process of measuring site-specific  $K_d$ s (DOE 2004, page E-21).

<sup>5</sup> DOE 2004, pages E-22 – E-25.

<sup>6</sup> According to DOE's transport model, U in soils would not reach groundwater within the next 1000 years (DOE 2004, page E-23).

<sup>7</sup> DOE's SSL for U is 2.89E+22 mg/kg (DOE 2004a, page 5-34). This value is physically impossible. See Jeer, 2004, page 5 for a discussion of this issue.

<sup>8</sup> DOE 2004, page G-12.

There are two possible reasons for the non-detection of tritium. First, there is no tritium in the background samples. Second, the analytical method that DOE is using is not sensitive enough to detect the tritium. If the first case is true<sup>9</sup>, then any tritium detected in groundwater at Pantex would be the result of contamination by Pantex. If the second case is true, DOE can establish background concentrations for tritium by using a more sensitive analytical technique (e.g., electrolytic enrichment).

Because of this failure to establish background, DOE cannot determine whether tritium from Pantex has been transported to the perched or Ogallala Aquifers. Nonetheless, DOE makes the following claim: *'Groundwater monitoring data indicates no measurable SRC<sup>10</sup> impacts to the perched or Ogallala Aquifer.'*<sup>11</sup> DOE also states: *"To date, no discernable levels trends (sic) of elevated tritium have been observed in either aquifer."*<sup>12</sup> With respect to tritium, the truth of these statements cannot be determined until background concentrations are established.

Recommendation: DOE should use a more sensitive analytical technique to establish tritium background concentrations.

### **Ogallala background wells**

All of the wells used to establish background concentrations for the Ogallala Aquifer are either on Pantex property or are north of Pantex<sup>13</sup>. Groundwater from Pantex flows toward the north<sup>14</sup>. These wells should not be used to establish background concentrations because they may have been affected by Pantex operations.

Recommendation: DOE should establish background concentrations using only wells that cannot have been affected by Pantex operations. No background wells should on or down gradient of Pantex.

### **References**

DOE, 2004, *Final Pantex Plant Radiological Investigation Report*, January, 2004.

EPA, 1999, *Understanding Variation in Partition Coefficient,  $K_d$ , Values*, Volume II, August 1999, EPA 402-R-99-004B.

EPA, 2000, *Soil Screening Guidance for Radionuclides: Technical Background Document*, October 2000, EPA/540-R-00-006.

Institute for Energy and Environmental Research (ieer), 2004, *Comments on the Pantex Radiological Investigation Report*, June 9, 2004.

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<sup>9</sup> The author of these comments believes that this is unlikely.

<sup>10</sup> SRC = site relevant contaminant. According to DOE, the Pantex SRCs are: plutonium-239, thorium-232, uranium-234, uranium-235, uranium-238, and tritium (DOE 2004, page ES-5).

<sup>11</sup> DOE 2004, page ES-6.

<sup>12</sup> DOE 2004, page L-20.

<sup>13</sup> DOE 2004, page 3-24.

<sup>14</sup> DOE 2004, page 3-22.





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### Additional Comments on the Pantex Plant Radiological Investigation Report

Brice Smith, Ph.D. and Arjun Makhijani Ph.D.

Institute for Energy and Environmental Research, Takoma Park, Maryland

Prepared for Sustainability in Technologies, Agriculture and Nature's Diversity (STAND)

September 20, 2004

The following are supplemental comments prepared by the Institute for Energy and Environmental Research on the January 2004 Pantex Plant Radiological Investigation Report, henceforth referred to as the RI report. We have prepared this analysis for STAND (Sustainability in Technologies, Agriculture and Nature's Diversity) pursuant to a Technical Assistance Grant made to STAND by the U.S. Environmental Protection Agency. When our original comments were prepared in June 2004 we did not have a copy of the CD containing *Appendix D: Final Radiological Data Sets*. This was provided to us by Camille Hueni, the Remedial Project Manager, Region 6 Superfund Division at the U.S. Environmental Protection Agency (EPA). These comments address issues relating to the information contained in this appendix.

#### Main Findings and Recommendations:

Our examination of the Final Radiological Data Sets used in the RI Report to characterize the Pantex site has not allayed our concerns regarding the adequacy of the sample collection or data analysis procedures as raised in our revised comments of June 9<sup>th</sup> in relation to the determination of background.<sup>1</sup> We are pleased that in the July 6, 2004 additional comments from the EPA to BWXT Pantex that our recommendation for a complete review of the laboratory's Quality Assurance/Quality Control program has been incorporated.<sup>2</sup> Our analysis of the Final Radiological Data Sets for the soil and groundwater measurements has shown the same inconsistent and physically unreasonable uranium isotopic ratios as was found in the background samples. Thus we continue to recommend that the QA/QC program for all data samples be scrutinized and that the RI Report be redone using new samples that are analyzed in laboratories recently certified by the Environmental Measurements Laboratory for the appropriate isotopes of uranium, plutonium, thorium, and tritium.

In addition, the sampling for tritium in the ground and surface water must be done with a lower limit of detection than currently reflected in the data. As recommended in our June 9<sup>th</sup> revised comments, the background for tritium in ground and surface water should be determined from sampling techniques with a minimum detection limit of less than 5 picocuries per litre. The concerns we have discussed in regards to the uranium and tritium measurements raise questions as to the non-detection of plutonium in 75% of soil samples and 88% of ground and surface water

<sup>1</sup> Our original comments on the RI Report were presented on June 7, 2004 in a STAND meeting in Panhandle, Texas. A revised version of our comments was sent electronically to Camille Hueni at EPA on June 9, 2004.

<sup>2</sup> EPA 2004b

samples taken from the Pantex site. We continue to recommend that a suitable background for plutonium be determined from measurements with a lower limit of detection less than 0.001 to 0.01 pCi/gm given that releases to the environment cannot be ruled out from a historical analysis of Pantex operations.

Finally, we recommend that BWXT Pantex re-evaluate and seek external review for their Quality Assurance/Quality Control program used in the selection process of the laboratories to analyze the soil and water samples. We also recommend that they similarly re-evaluate and seek external review for their program to ensure an adequate examination and review of the resulting measurements in order to prevent, at a minimum, the use of data which violates basic physical laws and elementary principles of radiochemistry such as that presented in the Final Radiological Data Sets from the RI Report.

#### Determination of "Detected Result"

In the Final Radiological Data Sets, as in the background data sets, measurements were only considered if the analyzing laboratory "qualified" the result as being detected.<sup>3</sup> The procedure for the laboratory's decision to exclude these data points is not clearly specified in the text of the RI Report. There are a total of 364 soil samples, 50 ground water samples, and 2 surface water samples that are marked as non-detects even though their comparison to the reported detection limit determined by the standard procedure would have resulted in their being ruled detections. At least one measurement from each of the Site Relevant Contaminants (SRCs) (uranium-234, uranium-235, uranium-238, thorium-232, plutonium-239, and tritium) were excluded in this way. In a number of cases these measurements were above the "Decision Level" as measured by the counting error but below the "Detection Limit" as reported by the laboratory. The rationale for the exclusion of these data points must be more fully discussed both in the RI Report and in the response of BWXT Pantex to the request for all QA/QC information regarding the laboratories performing the measurements. The issue of "qualified" data is particularly important within the context of the serious flaws uncovered in the measurements of uranium in which the reported isotopic ratios are inconsistent with the basic principles of uranium radiochemistry and the measurements of total uranium are inconsistent with the reported activity of U-238 and physically impossible.

#### Thorium-232

The characterization of Th-232 contamination in water was insufficient in the Final Radiological Data Sets to use in characterization of the Pantex site. As noted in the July 6<sup>th</sup> additional comments from the EPA, no thorium measurements are reported for the groundwater in either the Ogallala or perched aquifers.<sup>4</sup> For comparison, a total of 962 ground water samples were analyzed for U-234 and 978 were analyzed for U-238. In addition, there were only 12 surface water samples analyzed for thorium contamination. This is in comparison to 541 surface water samples analyzed for U-234 and 540 samples analyzed for U-238. Considering the link between the source of thorium oxides and uranium oxides in the dismantlement of weapons and the potential for thorium contaminated materials to have been burned at the burning grounds as discussed in our earlier comments, it is important that a more thorough characterization of the water (both surface water and groundwater) for this SRC be conducted before any conclusions regarding the contamination of the Pantex site can be made.

#### Total Uranium

The measurement of total uranium in the soil from the Final Radiological Data Sets shows the same anomalies in regards to the measurements U-238 activity as found in the background data sets. Figure 1 below shows the results for the measurements of total uranium that also had measurements of U-238 activity reported as detected.

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<sup>3</sup> RI Report p. C-4 and I-9

<sup>4</sup> EPA 2004b

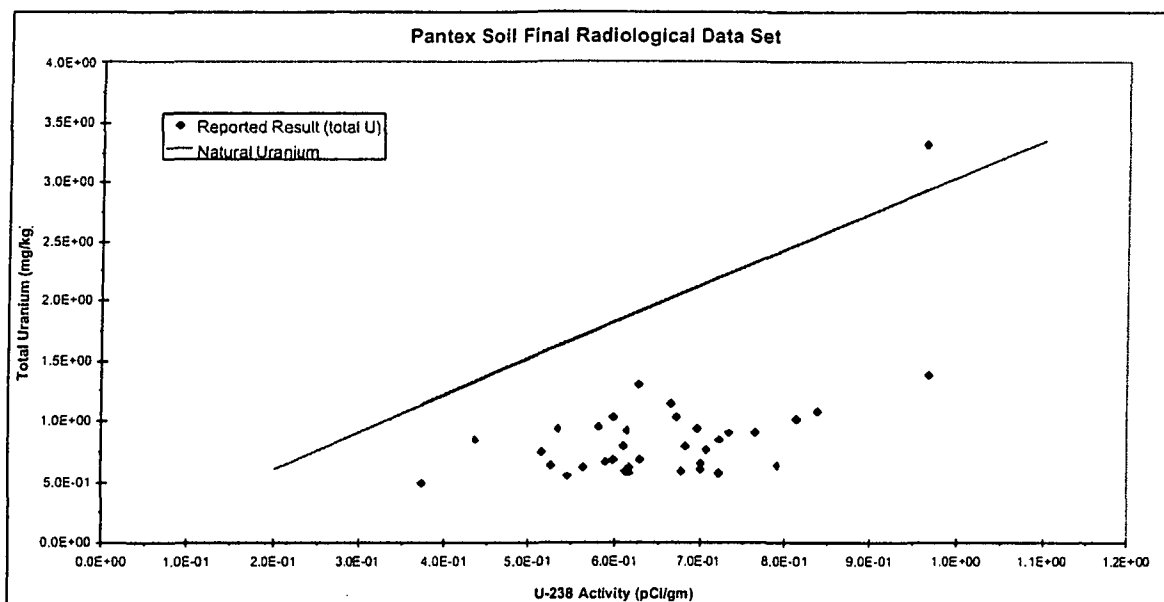


Figure 1: Graph of the measured values of total uranium and U-238 activity in soil at the Pantex site. The solid line indicates the trend that should be expected if it is assumed that essentially 100% of the mass of the uranium is due to U-238 as is the case in natural or depleted uranium.

In natural or depleted uranium nearly 100% of the uranium mass is attributable to U-238 and thus both forms of uranium should follow the solid line in Figure 1. With the exception of a single data point, all of the reported measurements show a U-238 activity in excess of that expected for natural or depleted uranium which is not physically possible. In addition, the data show no apparent strong correlation between U-238 activity and total uranium measured which further indicates that the measurements are not reliable and should not be used as part of a characterization of the Pantex site. This conclusion is further supported by the fact that more than 75% of the 1,375 soil samples analyzed for total uranium were recorded as being non-detections while just 0.26% of the 1,910 soil samples taken for U-238 were recorded as non-detections.

As with Th-232, the sampling for total uranium in the groundwater and surface water was inadequate to make a determination concerning the contamination of the Pantex site. While there were a large number of measurements taken for the activity of specific isotopes of uranium in the groundwater and surface water, there were only two measurements of total uranium in the groundwater (one from the Ogallala and one from the perched aquifer) and there were no measurements taken for the surface water. Given the concerns relating to the accuracy of the uranium measurements discussed here and in our revised comments on June 9<sup>th</sup>, additional measurements by a qualified laboratory should be made for the groundwater and surface water as part of preparing a new version of the RI Report in line with our recommendations.

#### Uranium-235

It is our conclusion that the measurements of U-235 in soil as presented in the Final Radiological Data Sets are not reliable and should not be used in order to characterize the Pantex site. Of the 912 samples analyzed for this isotope, nearly 47% were reported as non-detections. Figure 2 shows those that were reported as detected as a function of reported U-238 activity.

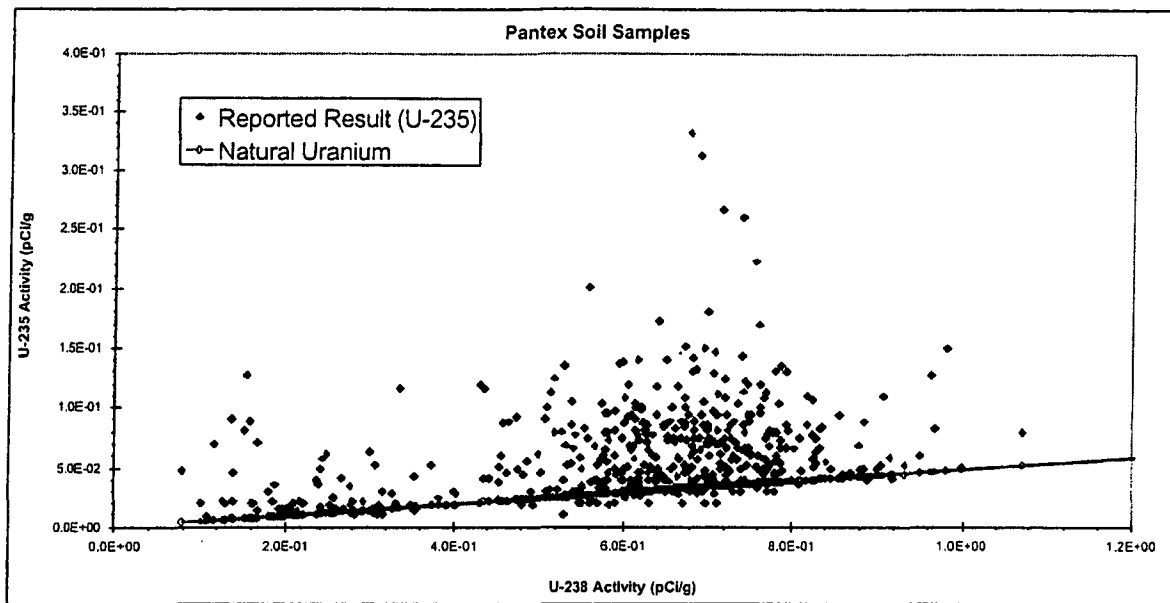


Figure 2: U-235 activity as a function of U-238 activity for soil samples in the Final Radiological Data Set that list both as detected. The solid line indicates the expected trend for natural uranium. The region above the line would be for enriched uranium while the region below the line would be for depleted uranium.

As with the data used to determine background, the isotopic ratios of U-235 to U-238 in the soil measurements are not consistent with natural or depleted uranium, and appear to show no clear correlation between the two isotopes. Since samples of depleted uranium should lie below the solid line in Figure 2, the data make even less sense in the context of Pantex operations. If these data were to be believed, it would indicate the presence of predominantly enriched uranium on site. The average ratio of U-235 to U-238 from these data is found to be  $0.11 \pm 0.09$ . The average is more than 2.2 times the expected ratio for natural uranium. However, the large standard deviation (80% of the average) indicates the significant spread in the data and makes it yet more difficult to say anything meaningful from this collection of measurements. It is our expert opinion that the soil data for U-235 as presented in the Final Radiological Data Sets is not physically reasonable, and that it is consistent with our previous conclusions regarding a likely problem with the QA/QC program at the laboratories performing the analysis.

For the groundwater and surface water, the number of samples analyzed for U-235 was far smaller than for soil or for measurements of other uranium isotopes in water. There were only a total of 30 ground water samples analyzed for this isotope. This is compared to 962 ground water samples analyzed for U-234 and 978 analyzed for U-238. The results for the ground water samples where both U-235 and U-238 were reported as detected are shown in Figure 3.

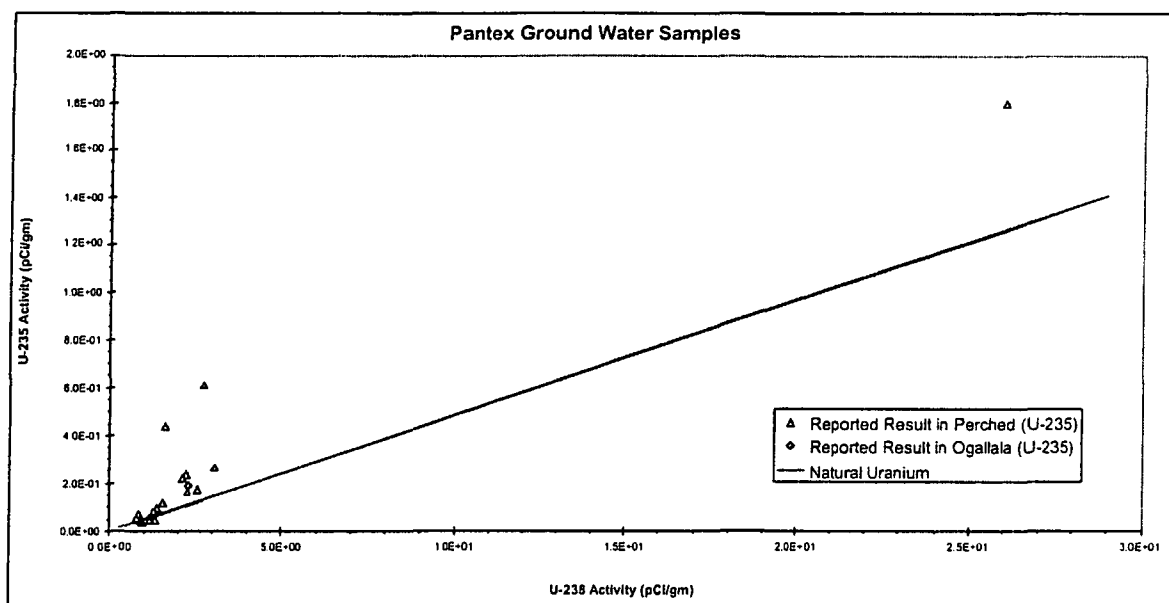
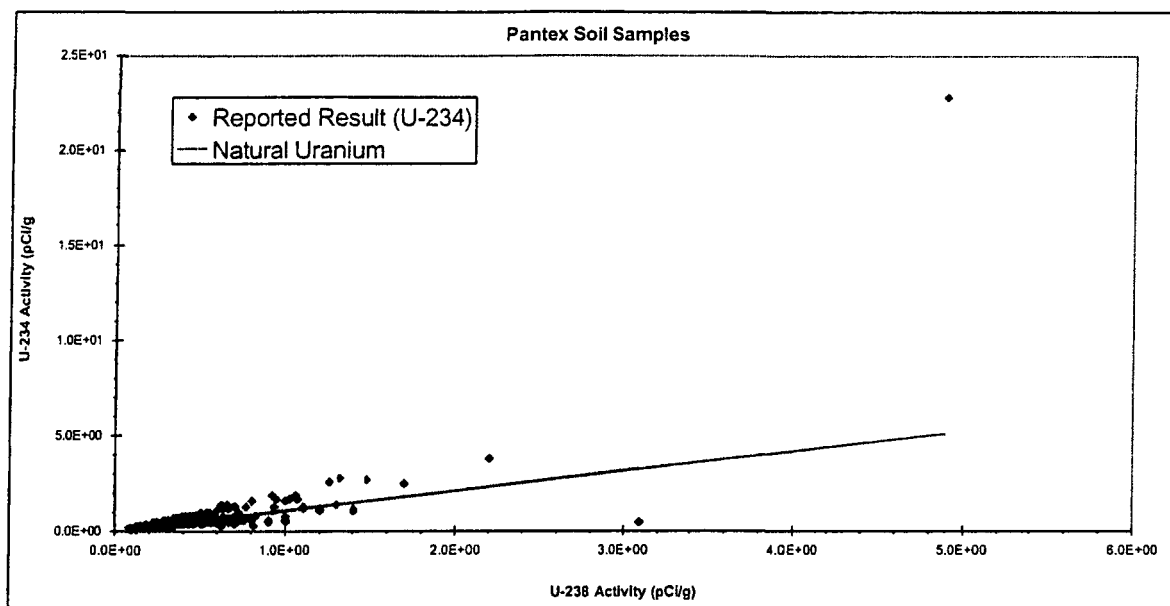


Figure 3: U-235 activity as a function of U-238 activity for the ground water samples in the Final Radiological Data Set that list both as detected. The triangles represent samples taken from the perched aquifer and the diamonds represent samples from the Ogallala aquifer. The solid line indicates the expected trend for natural uranium. The region above the line would be for enriched uranium while the region below the line would be for depleted uranium.

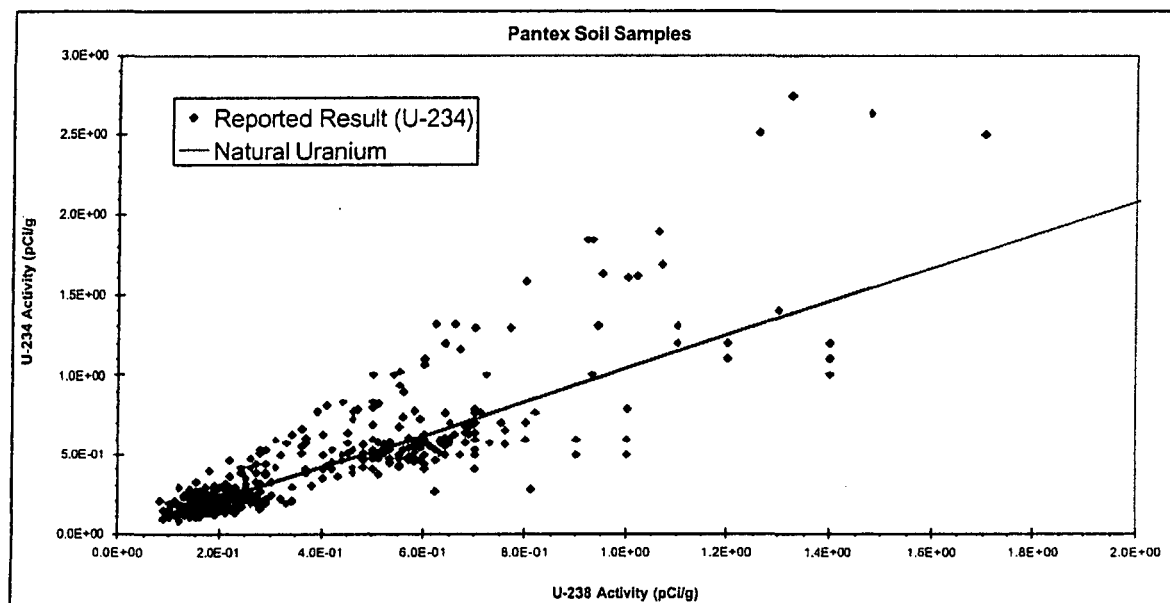
From the data in Figure 3, indications of the same type of anomalous ratio can still be seen as was found in the soil and in the samples analyzed to determine background. The majority of the samples that deviate significantly from natural uranium are above the line which would be appropriate for enriched uranium, but the scatter does not show any clear trend. For the surface water, there were only 4 samples taken and 3 were designated as non-detections. The indications of continued faulty laboratory analysis and/or data collection procedures, and the limited number of samples analyzed for U-235 support our recommendation for a new sampling of the Pantex site and analysis by a recently certified laboratory.

#### Uranium-234

Except for a single sample, the measurements of the U-234 activity in soil are broadly consistent with the presence of natural uranium. Figures 4a and 4b below show the results for U-234 activity as a function of the reported U-238 activity in the Final Radiological Data Sets for the locations at which both isotopes were reported as detected.



(a)



(b)

Figure 4: U-234 activity as a function of U-238 activity for the set of soil samples in the Final Radiological Data Set that list both isotopes as "detected" (a), as well as for the region of U-238 activities less than 2 pCi/gm to allow greater detail (b). The solid lines indicate the expected trend for natural uranium. The region above the lines would be for enriched uranium while the region below the line would be for depleted uranium.

For uranium in secular equilibrium the ratio of U-234 activity to U-238 activity should be close to one. For the measurements given in the Final Radiological Data Sets, the average ratio is found to be  $1.03 \pm 0.33$ . The only serious question surrounding this ratio is connected to the measurements of U-235 discussed above. In our opinion, the U-235 data are not reliable as it stands, particularly given the similarly inconsistent results for the isotopic ratios from the samples taken in order to determine background. However, in light of the indication of possible enriched uranium in the U-235 soil samples analyzed we note that there are 22 samples that have a ratio of U-234 to U-238

activity that is more than 3 standard deviations above the average which might indicate the presence of some level of enriched uranium as well. Only 2 of these 22 samples (Sample ID 20011107D01204 from the Building 12 Sump and Sample ID PTX07-A E-3D08-0-1 from SWMU 57) have U-235 results reported as detected, but both of these samples show ratios that are more consistent with enriched uranium than natural or depleted uranium.

	Ratio U-234/U-238	Ratio U-235/U-238
20011107D01204	2.06 (1.0)	0.454 (0.0484)
PTX07-A E-3D08-0-1	2.04 (1.0)	0.0755 (0.0484)

The numbers in parenthesis are the ratios expected for natural uranium. SWMU 57, also known as Landfill 6, was one of the landfills that was not found in the location that it originally thought to be (i.e. next to Building 12-95).<sup>5</sup> This uncertainty in the process history raises further concerns over these measurements. A re-sampling of the Pantex site with analysis carried out by a properly certified laboratory with reliable measurements for all uranium isotopes at each sample location is necessary to clarify the actual nature of the contamination present.

In relation to the groundwater and surface water samples, we concur with the EPA's comment from June 7<sup>th</sup> that a reference for the U-234 to U-238 ratio of roughly 2.2 in the ground water at the Pantex site claimed in the RI Report should be supplied, particularly in light of questions regarding the possible detection of enriched uranium in the soil at the site.<sup>6</sup> It has been argued that the surface water shows a U-234 to U-238 ratio closer to two than one because of the large amount of ground water that has been released to the surface onsite. The average ratio found for surface water was  $1.8 \pm 0.6$  as compared to  $1.9 \pm 0.4$  for groundwater from the information in the Final Radiological Data Sets. In light of this explanation from BWXT Pantex, it seems unusual that the percentage of samples that were reported as non-detections in the surface water was nearly 30 times greater than for the ground water (12.2% vs 0.42%). Again, these results further call into question the reliability of the data and support our recommendation that the soil and water sampling be redone before a new draft RI Report is issued.

#### Pu-239

In our June 9<sup>th</sup> revised comments, we concluded in relation to the question of plutonium contamination at the Pantex site that

Discharges of plutonium on to the site cannot be ruled out as sources of contamination of ditches and playa sediment. For instance, the 1961 plutonium dispersal event may have resulted in plutonium contamination being discharged on to the site via the laundry or the shower drain. Further, the primary high explosives were in contact with plutonium. We recommend a careful, properly validated review and analysis of possible plutonium contamination be undertaken as part of a validated sampling plan, with the analysis done by a laboratory certified for plutonium analysis by the Environmental Measurements Laboratory. Fallout background for the site should be established and detection limits should be kept well below this level. The comparison of background levels should be made to surrounding offsite areas where there is high confidence that no contamination from Pantex operations exists. The comparison of Pantex to other DOE sites in very different locations relative to the Nevada Test Site is not a meaningful comparison for background fallout levels.

In light of these considerations, we note that the detection limits achieved for plutonium in the analysis of soil samples presented in the Final Radiological Data Set (0.02 pCi/gm) was on average 20 times higher than the lower detection limits of 0.001 pCi/gm commonly achievable with alpha spectroscopy as cited by the EPA in its Interim *Final Risk Assessment Guidance for Superfund Volume I*.<sup>7</sup> The detection limit for water was on average twice that commonly achievable with alpha spectroscopy. The higher detection levels from the laboratories conducting the analysis of Pantex samples calls into question their findings that 75% of the soil samples were non-detections, while 88% of the groundwater and surface water samples were reported as non-detections.

The repeated use of glassware on older samples and other difficulties associated with achieving a lower detection limit were cited in the RI Report as a reason to consider an even higher detection limit (0.05 pCi/gm).<sup>8</sup> In areas of the Pantex site where the potential for contamination with plutonium cannot be conclusively ruled out (this includes such areas as the playas and ditches) measurement techniques capable of achieving the lower detection should be

<sup>5</sup> RI Report p. 5-43

<sup>6</sup> EPA 2004a and RI Report p. C-13

<sup>7</sup> EPA 1989 p. 10-18 to 10-19

<sup>8</sup> p. 5-42 to 5-43 and Appendix I

used on a sufficient number of split samples during the execution of the re-sampling we recommend to provide confidence in the adequacy of the site characterization resulting from the use of a higher detection limit. The higher detection limit used to hold down costs should not be greater than 0.01 pCi/gm, which is one order of magnitude greater than that typically achievable for plutonium analysis.

### Tritium

In the soil data presented in the Final Radiological Data Sets for tritium, there are 59 samples that are listed as "R" in the "Detected Result (Y/N)" column. These 59 samples are spread across Zones 4 and 12, the Independent Sites, and SWMU 82. The status of this data and the reason for its exclusion needs to be clarified in the Appendix as well as in the text of the RI Report. Clarification of this data is particularly important given the fact that the average value reported for those samples with an "R" was nearly 1,250 pCi/gm which is more than 320 times the Preliminary Remediation Goal (PRG) for tritium in soil.<sup>9</sup> The average detection limit for these "R" samples was more than 435 pCi/gm using the procedure set forth for data that the laboratory "qualified" as being detected, which is more than 110 times the soil PRG of 3.8 pCi/gm.

As with the plutonium analysis, the detection limits for tritium in water were on average too high to accurately characterize any potential impacts to the ground or surface water from Pantex operations. The average detection limit for the ground water samples as reported in the Final Radiological Data Set was 137 pCi/L, while the detection limit for the surface water was 165 pCi/L. The detection limit for the surface water was calculated with a correction to two data points that report clearly faulty counting errors that are 1000 times too large. Sample IDs 19950322A01009 and 19950321A00988 report values equivalent to a detection limit of 153.45 pCi/mL = 153,450 pCi/L. Comparing this to the other detection levels and the fact that pCi/mL and pCi/L were both used as units for reporting the surface water results it is most likely that this was supposed to be 153.45 pCi/L. These mistakes in the data collection further highlight the need for a thorough review of all future draft reports.

For comparison to the Pantex detection limits, we note that the typical background levels of tritium in lakes, rivers, and potable water were on the order of a few tens of picocuries per liter.<sup>10</sup> Thus, the use of a detection limit several times higher is not appropriate to properly characterize a site. This concern is further highlighted by the lack of a determination of background for tritium at the Pantex site, the observation of tritium at a level of 1.2 million pCi/L in water near the drip spigots on Building 12-64, and the known release from the "Cell 1 Incident" in May 1989.<sup>11</sup> The use of such a high detection limit calls into question the determination that 92% of the ground water and 90% of the surface water samples were non-detections as reported in the Final Radiological Data Sets. As per our previous comments, the background for tritium should be established using techniques with a lower detection limit of 5 pCi/L and then a re-sampling of both the ground and surface water should be undertaken to adequately investigate the potential impact of Pantex operations on the surrounding water supplies.

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<sup>9</sup> RI Report p. 5-36

<sup>10</sup> Eisenbud and Gesell 1997 p. 182

<sup>11</sup> RI Report p. 2-24 and L-2 to L-3



### References

Eisenbud and Gesell 1997	Merril Eisenbud and Thomas Gesell, <u>Environmental Radioactivity From Natural, Industrial, and Military Sources Fourth Edition</u> , Academic Press, San Diego (1997)
EPA 1989	U.S. Environmental Protection Agency Office of Emergency and Remedial Response, "Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part A)", Washington, D.C., December 1989 (EPA/540/1-89/002)
EPA 2004a	Camille D. Hueni, Letter to Mr. Jerry S. Johnson "Re: Comments - Final Pantex Plant Radiological Investigation Report for the U.S. Department of Energy/National Nuclear Security Administration, Pantex Plant, Amarillo, Texas, January 2004", June 7, 2004
EPA 2004b	Camille D. Hueni, Letter to Mr. Jerry S. Johnson "Re: Additional Comments - Final Pantex Plant Radiological Investigation Report for the U.S. Department of Energy (DOE)/National Nuclear Security Administration, Pantex Plant, Amarillo, Texas, January 2004", July 6, 2004
RI Report	BWXT Pantex, L.L.C., "Final Pantex Plant Radiological Investigation Report", Amarillo, Texas, January 2004

### Acronyms

SWMU Solid Waste Management Unit  
SRC Site Relevant Contaminant  
PRG Preliminary Remediation Goal

November 9, 2004

Pam Allison  
STAND Inc.  
7105 W. 34<sup>th</sup> Ave, Suite E  
Amarillo, TX 79109-2907

Dear Ms Allison,

Here are some thoughts arising from my review of the Texas Commission on Environmental Quality's (TCEQ) conditional approval letter<sup>1</sup> for the final Pantex Risk Reduction Rule Guidance (RRRG)<sup>2</sup>.

- TCEQ instructed DOE to justify the inclusion of the two highest chromium values (0.0318 mg/L and 0.0071 mg/L) or remove them from the background data set<sup>3</sup>. These values do not appear to have been removed from the data set. I am not aware of any justification of these values by the DOE.
- TCEQ did not instruct DOE to justify the inclusion of the high TI value (0.0339 mg/L)<sup>4</sup> in the background data set.

I have re-examined the chromium and thallium data in the RRRG<sup>5</sup>.

- Figure 1 (below) shows chromium results for what DOE calls background in the Ogallala. Non-detects were set to 0.0005 mg/L, one half of the lowest reported value of 0.001 mg/L. The highest value (0.0318 mg/L) is from well PTX08-1011A.
- Figure 2 also shows chromium results for background in the Ogallala. However, in this plot the seven results from well PTX08-1011A have been removed from the data set. The 95% upper tolerance limit (UTL) was calculated as described in EPA 1989<sup>6</sup>. Note that even with the results for well PTX08-1011A removed, a number of 'background' results exceed the 95% UTL. This indicates that the chromium data from the Ogallala at Pantex may represent two distinct populations. DOE should be required to justify keeping the higher results in the background data set.
- There are not enough TI detections to permit calculation of a UTL. Seventeen of the 23 results were non-detects<sup>7</sup>. The TI results are shown in Figure 3. The non-

---

<sup>1</sup> TCEQ, 2003.

<sup>2</sup> DOE, 2002.

<sup>3</sup> TCEQ, 2003, pages B-10 and B-11. Both of these results are from well PTX08-1011A. In 1999 RDX was detected in well PTX08-1011A (Rice and Allison, page D-15).

<sup>4</sup> This result also from well PTX08-1011A.

<sup>5</sup> DOE, 2002, Table C-2.

<sup>6</sup> Pages 5-20 – 5-22. The calculation of a UTL is not valid unless the coefficient of variation (CV) is less than 1.0 (EPA 1989, page 4-6). In this case the CV is 0.87.

<sup>7</sup> Sixteen sample results remained after removing the seven results from well PTX08-1011A.

detects were set to 0.0001 mg/L. This is slightly less than the lowest detected value (0.00011 mg/L). The highest value (0.0339 mg/L, from well PTX08-1011A) is more than 50 times higher than the next highest value (0.00044 mg/L). DOE should be required to justify keeping this result in the background data set.

I hope this information is useful. Please contact me if you have any questions or comments.

Sincerely,

George Rice  
414 East French Place  
San Antonio, TX 78212  
tel/fax: 210-737-6180  
jorje44@yahoo.com

## Ogallala "Background" Cr at Pantex

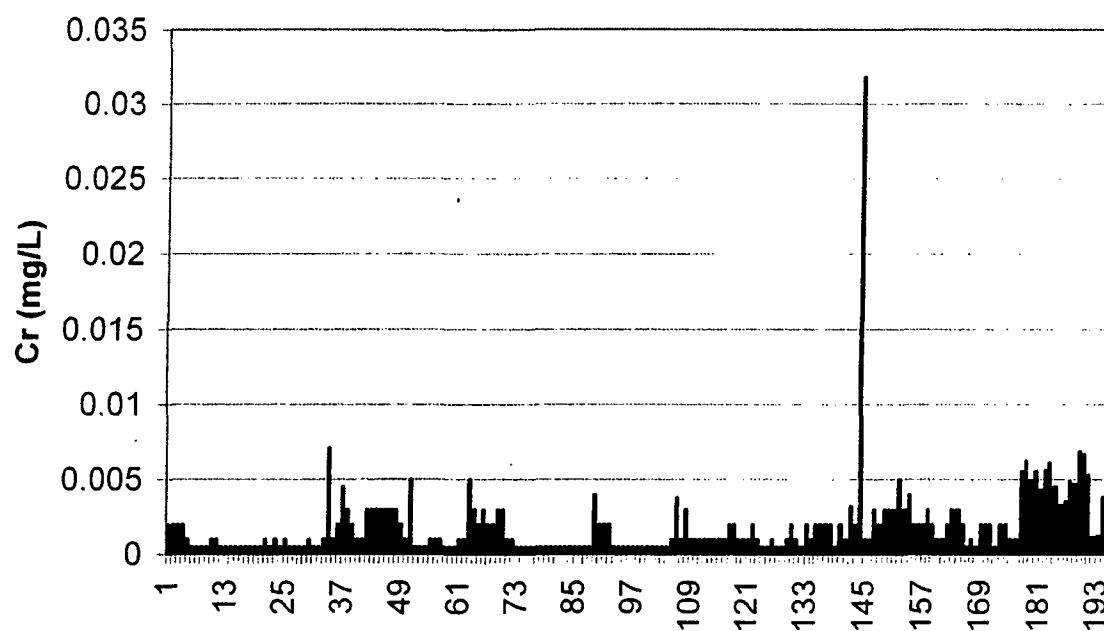


Figure 1

# of  
Samples

## Cr Concentrations in Pantex Ogallala "Background" Wells

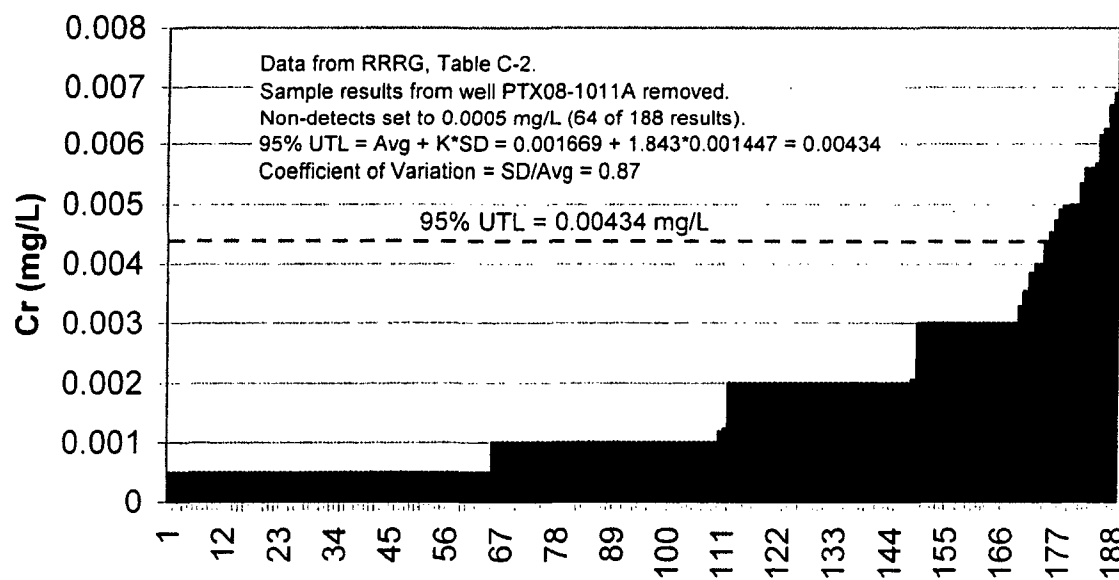
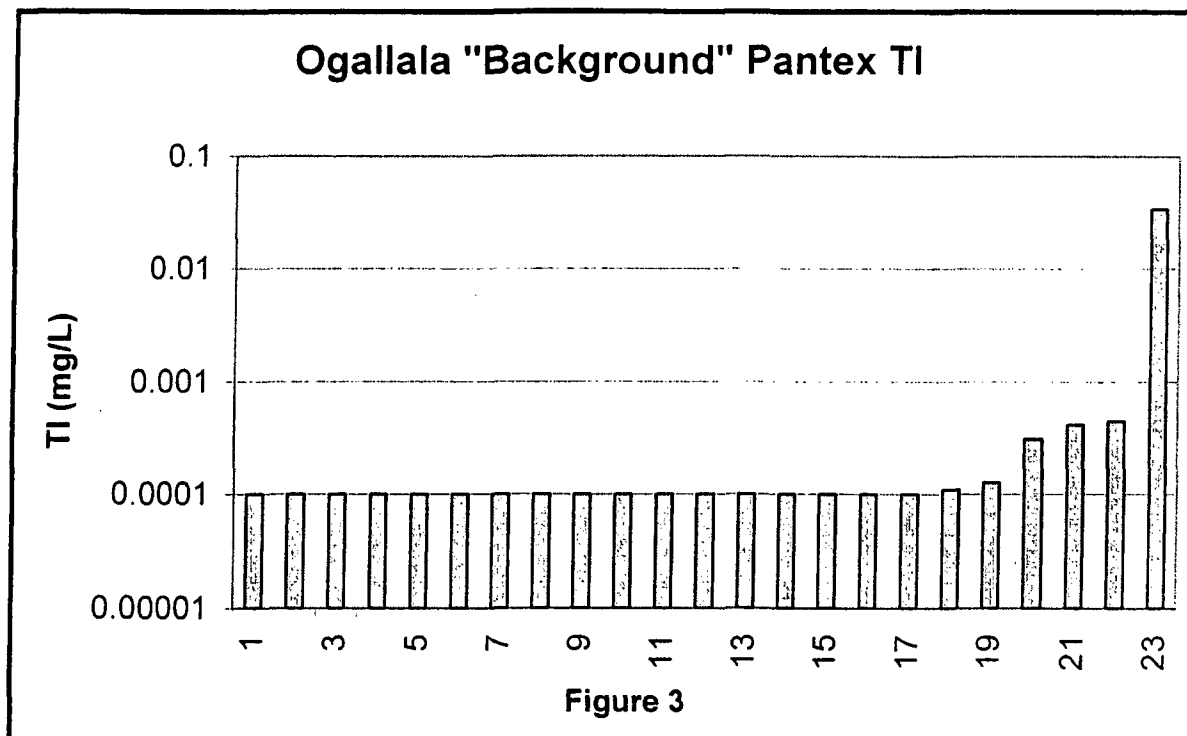


Figure 2

# of  
Samples



## References

DOE, 2002, *Risk Reduction Rule Guidance to the Pantex Plant RFI*, Final Report, April 2002. Note, the final Risk Reduction Rule Guidance document produced by DOE in 2004 appears to be identical to this document.

EPA, 1989, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities*, April 1989, EPA/530-SW-89-026

Rice, G., and P. Allison, 2004, *Contaminants in the Ogallala Aquifer at Pantex*, STAND Technical Report 2004-1, May 2004.

TCEQ, 2003, *Conditional Approval, Final Risk Reduction Rule Guidance (RRRGD) to the Pantex Plant RFI*, Dated April 2002, June 23, 2003.



# STAND

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STAND, Inc.  
7105 W 34<sup>th</sup> Ave, Ste E  
Amarillo, TX 79109

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October 21, 2004

Arjun Makhijani, Ph.D.  
President  
Institute for Energy and Environmental Research  
6935 Laurel Ave, Suite 201  
Takoma Park, MD 20912

Re: Technical Advisor Contract

Dear Dr. Makhijani:

As requested by Brice Smith of your staff, STAND is in agreement to terminate its contract with you for technical services as of October 31, 2004.

On behalf of STAND, we appreciate the technical assistance you have provided it and this community, and look forward to working with you in the future. Your expertise has been so important by identifying concerns for our community – work that had not previously been done.

Please let us know if you have any questions. I can be reached at (806) 358-2622.

Sincerely,

Cletus G. Stein  
President

Pamela S. Allison  
Project Manager

Serious Texans Against Nuclear Dumping

pam allison

---

From: Brice Smith [brice@ieer.org]  
Sent: Wednesday, October 13, 2004 11:32 AM  
To: (b) (6)  
Subject: TAG Grant



progress report  
(Aug).doc



progress report  
(July).doc

Pam,

I am sorry that I was not here to get your call. Arjun was called away unexpectedly to India and as such I have been working on even more projects than usual and have been taking over some of Arjun's travels. I was in Savannah when you last called meeting with people down there about the grouting of the high-level waste in the tanks at SRS. I am attaching a copy of our July and August progress reports. Please let me know if you have any trouble reading them. We have swtiched to a new internet service provider and so hopefully things will be working better. We also went through a period during the summer where we had serious problems with our computers.

With Arjun in India it took a little longer than hoped to let he and Annie discuss the best plan for the remaining money in the TAG grant, but they decided that it would be best to return the remaining money to you and let you all use it as you saw best. I am not sure exactly what needs to be done in that regard since Betsy and Diana are not in today, but if you would please let me know (you could also copy ieeroffice@ieer.org) on what we need to do to let you spend that money I would greatly appreciate it. Hopefully the EPA will renew STAND's grant and we can continue to dog Pantex and the EPA on the rad report as it moves forward in the process. I know that we have been very happy to have been a part of the work done so far and would like to continue to follow it up. Please feel free to call any time. I will be on a conference call today from 3pm until about 4:30 eastern time and then in Chicago on Friday and part of Saturday, but other than that I am usually in the office. I hope all is well, and thanks again for all your help and understanding on this project.

Brice

**Pantex Environmental Remediation Public Meeting**

Square House Museum, Panhandle

December 6, 2004, 4:00 p.m.

*Hosted by*

United States Department of Energy/National Nuclear Security Administration,

Pantex Site Office (USDOE/NNSA, PXSO)

*and*

Texas Commission on Environmental Quality (TCEQ)

---

**4:00 - 4:05 Introduction**

**Jim McWilliams, TCEQ**

**4:05 - 4:35 Action Items/Questions from  
September 13, 2004 Public Meeting**

**Specific Well Questions  
General Questions**

**Larrie Trent, BWXT Pantex  
Dennis Huddleston, BWXT  
Pantex**

**4:35 - 5:15 Status Update**

1. Soil Vapor Extraction System
2. Pump & Treat System
3. Reports
4. D&D

**Dennis Huddleston, BWXT  
Pantex**

**5:15 - 5:45 Field Activities**

1. Burning Ground Landfill Covers
2. Ozone Injection Study
3. Perched aquifer barrier study
4. Pump & Treat conveyance line

**Dennis Huddleston, BWXT  
Pantex**

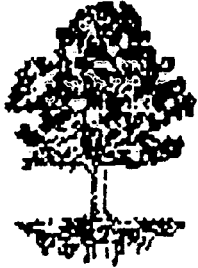
**5:45 - 6:00 Future Activities and Goals**

**Dennis Huddleston, BWXT  
Pantex**

**6:00 ER Program Questions & Answers**

**Johnnie Guelker, PXSO  
Dennis Huddleston, BWXT  
Pantex**





# STAND

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9/2



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Technical Assistance Grants from the EPA make it possible for STAND to hire scientists to review DOE/  
Pantex reports. For copies of their reviews or TCEQ memoranda, contact STAND office .

Quarterly Groundwater Meeting—December 6, 2004  
Panhandle Square House Museum—4PM

December 5, 2004—STAND Citizens Pantex Groundwater Review—3PM

## Amarillo is Recycling!

What better way to sustain our resources than to conserve?

B.F.I. Is working with a local volunteer group to “protect our beautiful Panhandle  
environment and leave a clean world to future generations”.

Join them the 3rd Wednesday of each month at Southwest Library, 7PM.

Recycle Now! Find out how at [amarillorecycles.com](http://amarillorecycles.com)

Items accepted include: newspaper, plastics, tin cans, office paper, and much more.

Stand is a 501(c)(3) not-for-profit grassroots group dedicated to citizen responsibility for the care of our  
natural resources, to government that is accountable to the community, and to a forum for public debate in  
which solutions might be found... for our communities.

## Issues and Research Opportunities

Ron Curry, the New Mexico state environment secretary, fined WIPP, Waste Isolation Pilot Plant, DOE's geologic disposal site near Carlsbad for mixed waste, (radioactive and hazardous), \$2.4 million for accepting improperly tested shipments from the Arco, Idaho, national laboratory. Since then, WIPP took in some 600 garbage drums of questionable stuff from the nuclear reservation in Hanford, Wash. There might not be much Curry can do about the 600 cans plus a hundred from Idaho. They're in the half-mile-deep man-carved caverns. Hauling them back up and shipping them back north sounds riskier than leaving them in the salt beds.

\*\*\*\*\*

Mesa Water Project running into problems with wildlife and Endangered Species issues, and potential impacts to springs along the Canadian River such as cessation of flow, and Aquifer Sustainability. Overall, National

Wildlife Federation and Environmental Defense recommend that the City of Dallas consider existing water reservoirs as more viable water supplies that avoid concerns of long-term sustainability that exist if they choose to buy water from Mesa.

\*\*\*\*\*

British flagged freighter's recently carried 300 pounds of weapon's grade plutonium to be converted into a form suitable for generating power, called "MOX", mixed uranium-plutonium oxide, possibly at nuclear power plants such as Catawba Nuclear Power Plant near Charlotte, N.C. The federal government is designing a similar plant near the Savannah River Site, near Aiken, where it plans to dispose of 34 metric tons of surplus plutonium as part of a joint U.S.—Russian nuclear reduction agreement. The weapons grade plutonium originated at Los Alamos, N.M., and was trucked overland. Jax Gardner of citizen's

against plutonium said she is concerned that the public is unaware of the amount of hazardous material moving across the country and through "sleepy little towns" like Charlotte.

\*\*\*\*\*

December 6th is the next Pantex Quarterly Groundwater meeting. Pantex is offering a meeting to answer questions about their site clean-up operations. If you have questions or comments, either come to the meeting or call a STAND Board Members and they will bring your issue up for you.

Pantex is demolishing and cleaning up some of the old buildings that are not being used from WWII. The Vapor Extraction System was talked about. The University of Nebraska has research suggesting Ozone use instead of the original Nitrogen system that was designed.

Come and join us on December 5th at 3PM for a preview of the meeting. Call for location.

***You are invited to join STAND! Fill in and return to the office.***

Name \_\_\_\_\_

Address \_\_\_\_\_ City \_\_\_\_\_

State and Zip \_\_\_\_\_ Phone \_\_\_\_\_

Fax \_\_\_\_\_ e-mail \_\_\_\_\_

I have enclosed my contribution to STAND for: \$ \_\_\_\_\_ Annual Membership Dues (\$20/person or \$10/student, part-time worker, or senior) \$ \_\_\_\_\_ Additional Tax Deductable Contribution for STAND work I would like to serve on the following committees:

☐ Membership ☐ Information ☐ Fund Raising ☐ Other \_\_\_\_\_

STAND is a 501(c)(3) nonprofit organization and depends on donations. Your support is appreciated.

# Texas Water Considerations

Laura Marbury of Environmental Defense came to the Panhandle in July to meet with STAND board members about the Texas Living Waters Project. The project's purpose is to perform and present research pertaining to regional water needs as water districts create new standards to assure water resources sustain the needs of the area for extended time periods.

Member groups for the project are Environmental Defense, National Wildlife Federation and the Lone Star Chapter of the Sierra Club. Laura spoke with the STAND Board Members about local ground water concerns and offered the perspective of the Texas Living Water Project. Their resolution containing the following **five principles is shown below**. Your comments are appreciated.

## Resolution to Support Principles for Protecting Texas' Water Resources:

### 1) Use existing water supplies efficiently.

Municipal, agricultural, and industrial water users should adopt aggressive water conservation practices, both large and small-scale. We should make the most of current water supplies before we start building dams and pipelines to develop new ones.

### 2) Keep rivers flowing.

Water planners and managers should make sure that enough water remains in rivers and streams to keep

Texas rivers flowing. They should also ensure that enough fresh water reaches coastal bays and estuaries to maintain their productivity as fisheries and as wildlife habitat.

### 3) Protect wildlife habitat.

Water management decisions and new water development projects should avoid or minimize adverse impacts to wildlife, water quality, and wildlife habitat.

### 4) Use surface and groundwater sustainably.

We should take water from rivers and pump water from underground aquifers only as fast as rainfall can replenish them. We need to leave water — and wildlife — for future generations.

### 5) Save tax dollars.

Water planners should make sure that new water development projects are cost-effective by carefully weighing the costs and benefits of the proposed project and alternatives.

How to manage fresh water resources is one of the most critical issues facing Texas in the new century. The state's population is expected to double over the next fifty years, creating immense pressure on state and local leaders. Laura was quick to affirm that water conservation is the best way of assuring sustainable water supplies.

---

## STAND Works - From the Past into the Future

STAND has a valuable history of 21 years, first stopping local nuclear dumping, then supporting citizens in other threatened "dumping areas". We are still Serious Texans Against Nuclear Dumping, working towards responsible cleanup at Pantex, but we are also now Texans who more fundamentally work towards "Sustainability in Technologies, Agriculture and Nature's Diversity". We are reaching out to everyone who might be an ally in conserving our limited and clean water, as well as keeping our land fruitful and healthy for the long haul.

While we are doing this work that others think will jeopardize jobs and endanger economic growth, and while we have had to sometimes fight a government that is not responsive to all of its citizens, a surprising number of people have supported us with

membership, encouragement, gifts and volunteering of all kinds. We can use the support of more people who actively care about their environment into the far future.

Decisions about a pit facility and partial cleanup at Pantex are still problematic, maybe even dire for the long term. But we have been a thorn in the side of the Powers that be, which have almost unlimited wealth and power in the form of government and corporation united. STAND is proof good things can be done and continued. We are committed to conserving and improving our inherited and sacred environment. Our goal is worth our time and energy. It engages our hearts and minds. We are not without solid hope, as long as some of us STAND together and don't give up or in.

By Jerry Stein



## Inside this issue:

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## Paula Breeding Presented with the Beverly E.C. Gattis Award

Beverly Gattis presented Paula Breeding with the annual award siting her long years and constant service. Paula helped establish the Peace Farm, served for many years as an officer for STAND, was a member and co-chair for the Pantex Plant Citizen Advisory Board, and serves her church. She offers consistent support, gives generously of her time, and is undaunted when she believes in a cause. No country or community can thrive without the participation of citizens like Paula. No organization can succeed without the generous efforts of its members.



The Beverly E.C. Gattis Community Service Award was created by the Board of Directors of STAND to honor those who demonstrate an exemplary commitment to conservation and to the participation of individuals in advocating for the well being of their community and the earth.

## Annual Meeting

STAND Annual Meeting was held on October 24th at the West Texas RX Garden Café. The 2005 Board of Directors were voted into service. They include: Sara Black, Paula Breeding, Penni Clark, Paul Coleman, Harry Everett, Beverly Gattis, Tonya Kleuskens, William Seewald, Doris Smith, Jerry Stein, Lydia Villanueva, Marian Vineyard, and Trish Williams. The Officers elected were Tonya Kleuskens, President; Jerry Stein, Vice-President; Sara Black, Vice-President; and Harry Everett, Secretary/Treasurer. Excellent refreshments were enjoyed thanks to Penni Clark and Beverly Gattis. Special classical Russian guitar music was played for the group by Amarillo's own Svetlana Petrey. Trish Williams-Mello presented a slide show from an independent research trip she made to Russia this summer. The title of the program was "Russia-

Plutonium, Poverty, and the People's Plight". As the titled implies, the show spotlighted activists who are working to help the Russian people and protect their Environment, emphasizing the nuclear weapons cities.

Greg Mello presented a very informative program on the "Status of the U.S. Nuclear Weapons Complex". Greg is the Executive Director of Los Alamos Study Group, with offices in Albuquerque and Santa Fe, New Mexico. The group specializing in research and education.

### THE VISION

*The Panhandle is our home;  
the world is our neighbor.  
STAND is committed to building a  
sustainable future,  
conserving the natural resources  
entrusted to our care,  
and protecting life, community,  
and democracy.*